CLAIMS:

1. A method for the preparation of cotton tissue comprising culturing regenerable non-embryogenic cotton callus tissue or embryogenic cotton tissue in media under dark lighting conditions, limited lighting conditions, or under green light.

2. The method of claim 1, wherein the dark lighting conditions or limited lighting conditions are between about 0 μEinsteins $m^{-2}sec^{-1}$ and about 5 μEinsteins $m^{-2}sec^{-1}$.

3. The method of claim 2, wherein the dark lighting conditions or limited lighting conditions are between about 0 μEinsteins $m^{-2}sec^{-1}$ and about 2.5 μEinsteins $m^{-2}sec^{-1}$.

4. The method of claim 3, wherein the dark or limited lighting conditions are about 0 μEinsteins $m^{-2}sec^{-1}$.

5. The method of claim 1, wherein the regenerable non-embryogenic cotton callus tissue is derived from hypocotyl, cotyledon, root, petiole, anther, flower, or leaf.

6. The method of claim 5, wherein the regenerable non-embryogenic cotton callus tissue is derived from a hypocotyl.

7. The method of claim 1, wherein the regenerable non-embryogenic cotton callus tissue is transformed.

8. A method for the preparation of embryogenic cotton tissue comprising culturing regenerable non-embryogenic cotton callus tissue in media containing an antioxidant.

9. The method of claim 8, wherein the antioxidant is activated charcoal, ascorbic acid, citric acid, cysteine hydrochloride, dithiothreitol, glutathione, mercaptoethanol, polyvinylpyrrolidine, polyvinylpolypyrrolidine, a sulfite salt, or vitamin E.

10. The method of claim 9, wherein the antioxidant is ascorbic acid.

11. The method of claim 10, wherein the concentration of the antioxidant in the media is between about 1 mg/L and about 1000 mg/L.

12. The method of claim 11, wherein the concentration of the antioxidant in the media is between about 10 mg/L and 100 mg/L.

13. The method of claim 8, wherein the regenerable non-embryogenic cotton callus tissue is transformed.

14. A method for the preparation of embryogenic cotton tissue comprising culturing regenerable non-embryogenic cotton callus tissue in media containing an ethylene inhibitor.

15. The method of claim 14, wherein the ethylene inhibitor is acetylsalicylic acid, aminoethoxyvinylglycine, amino-oxyacetic acid, 2,4-dinitrophenol, a cobalt salt, a nickel salt, 2,4-norbornadiene, salicylic acid, silver nitrate, or silver thiosulfate.

16. The method of claim 15, wherein the ethylene inhibitor is aminoethoxyvinylglycine.

17. The method of claim 16, wherein the concentration of the ethylene inhibitor in the media is between about 1 mM and about 100 mM.

18. The method of claim 17, wherein the concentration of the ethylene inhibitor in the media is between about 3 mM and about 10 mM.

19. The method of claim 14, wherein the regenerable non-embryogenic cotton callus tissue is transformed.

20. A method for the preparation of embryogenic cotton tissue comprising culturing transformed regenerable non-embryogenic cotton callus tissue in media containing an antioxidant and an ethylene inhibitor under dark lighting conditions, limited lighting conditions, or under green light.

21. The method of claim 20, wherein the ethylene inhibitor is aminoethoxyvinylglycine.

22. The method of claim 20, wherein:
the antioxidant is ascorbic acid; and the ethylene inhibitor is aminoethoxyvinylglycine.

23. The method of claim 22, wherein the dark or limited lighting conditions are between about 0 μEinsteins $m^{-2}sec^{-1}$ and about 5 μEinsteins $m^{-2}sec^{-1}$.

24. The method of claim 23, wherein the dark or limited lighting conditions are between about 0 μEinsteins $m^{-2}sec^{-1}$ and about 2.5 μEinsteins $m^{-2}sec^{-1}$.

25. The method of claim 24, wherein the dark or limited lighting conditions are about 0 μEinsteins $m^{-2}sec^{-1}$.

26. The method of claim 20, wherein the regenerable non-embryogenic cotton callus tissue is transformed.

27. The method of claim 20, wherein the regenerable non-embryogenic cotton callus tissue is derived from callus, hypocotyl, cotyledon, root, petiole, anther, or leaf.

28. A method for the preparation of transgenic cotton embryos comprising culturing transgenic embryogenic cotton tissue in media, wherein the media contains a support matrix.

29. The method of claim 28, wherein the support matrix is a silica/alumina chip, cloth, felt, or filter paper.

30. The method of claim 28, wherein the support matrix is filter paper.

31. A method for the preparation of transgenic cotton embryos comprising: culturing transformed regenerable non-embryogenic cotton callus tissue in media containing an antioxidant and an ethylene inhibitor under dark lighting conditions, limited lighting conditions, or under green light, to produce transgenic embryogenic cotton tissue; and culturing the transgenic embryogenic cotton tissue on a support matrix.

32. The method of claim 31, wherein the ethylene inhibitor is aminoethoxyvinylglycine.

33. The method of claim 31, wherein:
the antioxidant is ascorbic acid; and the ethylene inhibitor is aminoethoxyvinylglycine.

34. The method of claim 31, wherein the dark or limited lighting conditions are between about 0 μEinsteins $m^{-2}sec^{-1}$ and about 5 μEinsteins $m^{-2}sec^{-1}$.

35. The method of claim 31, wherein the support matrix is filter paper.

36. A method for the preparation of transgenic cotton embryos comprising culturing transgenic embryogenic cotton tissue in media containing an amino acid hydrolysate supplement.

37. The method of claim 36, wherein the concentration of the amino acid supplement in the media is between about 10 mg/L and about 500 mg/L.

38. The method of claim 37, wherein the concentration of the amino acid supplement in the media is between about 50 mg/L and about 150 mg/L

39. A method for the preparation of cotton embryos comprising culturing regenerable non-embryogenic cotton callus tissue in media containing an antioxidant and an ethylene inhibitor under dark lighting conditions, limited lighting conditions, or under green light, to produce embryogenic cotton tissue;

and culturing the embryogenic cotton tissue in media containing a support matrix and an amino acid hydrolysate supplement.

40. The method of claim 39, wherein the ethylene inhibitor is aminoethoxyvinylglycine.

41. The method of claim 39, wherein the antioxidant is ascorbic acid; and the ethylene inhibitor is aminoethoxyvinylglycine.

42. The method of claim 39, wherein the dark or limited lighting conditions are between about 0 μEinsteins $m^{-2}sec^{-1}$ and about 5 μEinsteins $m^{-2}sec^{-1}$.

43. The method of claim 39, wherein the support matrix is filter paper.

44. The method of claim 39, wherein the concentration of the amino acid supplement in the media is between about 10 mg/L and about 500 mg/L.

45. A method for the preparation of transgenic cotton embryos comprising culturing transgenic embryonic cotton tissue under dark lighting conditions, limited lighting conditions, or under green light and wrapped with a sealing material.

46. The method of claim 45, wherein the dark lighting conditions or limited lighting conditions are between about 0 μEinsteins $m^{-2}sec^{-1}$ and about 5 μEinsteins $m^{-2}sec^{-1}$.

47. The method of claim 46, wherein the dark lighting conditions or limited lighting conditions are between about 0 μEinsteins $m^{-2}sec^{-1}$ and about 2.5 μEinsteins $m^{-2}sec^{-1}$.

48. The method of claim 47, wherein the dark or limited lighting conditions are about 0 μEinsteins $m^{-2}sec^{-1}$.

49. The method of claim 45, wherein the sealing material is Parafilm M.

50. A method for the preparation of cotton embryos comprising culturing regenerable non-embryogenic cotton callus tissue in media containing an antioxidant and an ethylene inhibitor under dark lighting conditions, limited lighting conditions, or under green light, to produce embryogenic cotton tissue; and culturing the embryogenic cotton tissue in media containing a support matrix and an amino acid hydrolysate supplement under dark lighting conditions, limited lighting conditions or under green light and wrapped with a sealing material.

51. The method of claim 50, wherein the ethylene inhibitor is aminoethoxyvinylglycine.

52. The method of claim 50, wherein the antioxidant is ascorbic acid; and the ethylene inhibitor is aminoethoxyvinylglycine.

53. The method of claim 50, wherein the dark lighting conditions or limited lighting conditions are between about 0 μEinsteins $m^{-2}sec^{-1}$ and about 5 μEinsteins $m^{-2}sec^{-1}$.

54. The method of claim 50, wherein the support matrix is filter paper.

55. A method for the preparation of germinated transgenic cotton embryos comprising culturing transgenic cotton embryos in germination media containing a carbohydrate between a concentration of about 0.05% (w/v) and about 1% (w/v), wherein the carbohydrate is glucose, sucrose, fructose maltose, mannose, or xylose.

56. The method of claim 55, wherein the concentration of the carbohydrate is between about 0.1% (w/v) and about 0.5% (w/v).

57. The method of claim 55, wherein the carbohydrate is glucose.

58. A method for the preparation of transgenic cotton plants comprising:
    (a) culturing transformed regenerable non-embryogenic cotton callus tissue in media containing an antioxidant and an ethylene inhibitor under dark lighting conditions, limited lighting conditions, or under green light, to produce transgenic embryogenic cotton tissue;
    (b) culturing the transgenic embryogenic cotton tissue in media containing a support matrix and amino acid hydrolysate supplement under dark lighting conditions, limited lighting conditions, or under green light and wrapped in a sealing material, to produce transgenic cotton embryos; and
    (c) culturing the transgenic cotton embryos in germination media containing glucose or sucrose, wherein the concentration of the glucose or sucrose is at a concentration between about 0.05% (w/v) and about 1% (w/v).